

CHAPTER 2

TRUE/FALSE

1. The mean serves to act as a balancing point for the data.

Ans: True, LO: 1, Bloom: , Difficulty: Easy, Min:, AACSB:

2. The median identifies the data set center by establishing a value such that at least half the numbers in the data set are at or above that value and at least half the numbers are at or below.

Ans: True, LO: 1, Bloom: , Difficulty: Easy, Min:, AACSB:

3. If there are an odd number of items in a data set, the median is the average of the values of the two middle items.

Ans: False, LO: 1, Bloom: , Difficulty: Medium, Min:, AACSB:

4. When calculating the median of an ordered data set with an odd number of items, the median is the value of the middle item.

Ans: True, LO: 1, Bloom: , Difficulty: Medium, Min:, AACSB:

5. The most frequently occurring value of a data set is called the mean.

Ans: False, LO: 1, Bloom: , Difficulty: Easy, Min:, AACSB:

6. The most frequently occurring value of a data set is called the mode.

Ans: True, LO: 1, Bloom: , Difficulty: Easy, Min:, AACSB:

7. The range is the difference between the smallest and largest values in the data set.

Ans: True, LO: 2, Bloom: , Difficulty: Easy, Min:, AACSB:

8. The mean absolute deviation (MAD) measures the average absolute distance of data points from the mean of the data set.

Ans: True, LO: 2, Bloom: , Difficulty: Easy, Min:, AACSB:

9. A descriptive measure that is NOT measured in the same units as the original data is the variance.

Ans: True, LO: 2, Bloom: , Difficulty: Easy, Min:, AACSB:

10. The sample variance has the value n in the denominator while the population variance has the value $n-1$ in the denominator.

Ans: False, LO: 2, Bloom: , Difficulty: Medium, Min:, AACSB:

11. The standard deviation is approximately the average distance between the individual values in the data set and the data set center (i.e., the mean).

Ans: True, LO: 2, Bloom: , Difficulty: Easy, Min:, AACSB:

12. Since the population size is always larger than the sample size, a sample statistic can never be larger than the population parameter.

Ans: False, LO: 3, Bloom: , Difficulty: Medium, Min:, AACSB:

13. In a frequency distribution, x represents the possible values and $f(x)$ represents the counts or frequencies of those values.

Ans: True, LO: 3, Bloom: , Difficulty: Easy, Min:, AACSB:

14. In a bar chart, the height of the vertical bar represents the x value.

Ans: False, LO: 3, Bloom: , Difficulty: Easy, Min:, AACSB:

15. On the horizontal axis of a bar chart, one places the frequency or the relative frequency (but only one).

Ans: False, LO: 3 & 4, Bloom: , Difficulty: Easy, Min:, AACSB:

16. If a distribution has a shape that is positively skewed, this means that it has an elongated tail that extends in the right-hand direction.

Ans: True, LO: 3, Bloom: , Difficulty: Easy, Min:, AACSB:

17. In general, when a data set shows positive skewness, the mean will be smaller than the median; for negatively skewed data, the mean will be larger than the median.

Ans: False, LO: 3, Bloom: , Difficulty: Medium, Min:, AACSB:

18. The relative frequency of a class is the proportion of the number of members in that class.

Ans: True, LO: 4, Bloom: , Difficulty: Easy, Min:, AACSB:

19. The descriptive measures (mean, variance, and standard deviation) will yield different values for a relative frequency distribution versus a frequency distribution, for the same data set.

Ans: False, LO: 4, Bloom: , Difficulty: Easy, Min:, AACSB:

20. In a cumulative frequency distribution, we can show directly the number of data set members at or below any specified value.

Ans: True, LO: 5, Bloom: , Difficulty: Easy, Min:, AACSB:

21. When working with grouped data, classes should touch but not overlap and classes should be of equal widths.

Ans: True, LO: 6, Bloom: , Difficulty: Easy, Min:, AACSB:

22. The main difference between a bar graph and a histogram is that the bars are separated in a histogram to emphasize the fact that each class is a separate category.

Ans: False, LO: 6, Bloom: , Difficulty: Easy, Min:, AACSB:

23. The main difference between a bar chart and a histogram is that the bars are separated in a bar chart to emphasize the fact that each class/value is a separate category/discrete value.

Ans: True, LO: 3 & 6, Bloom: , Difficulty: Easy, Min:, AACSB:

24. In computing descriptive statistics from grouped data, the midpoint of each interval is treated as a representative value for all of the group members.

Ans: True, LO: 6, Bloom: , Difficulty: Easy, Min:, AACSB:

MULTIPLE CHOICE

25. Summaries of data, which may be tabular, graphical, or numerical, are referred to as:

- a. inferential statistics
- b. descriptive statistics
- c. statistical inference
- d. report generation
- e. none of the above

Ans: B, LO: 1, Bloom: , Difficulty: Easy, Min:, AACSB:

26. For a sample of 10 days, Harkin Research recorded the number of visitors to Tilton.com's website.

100, 100, 106, 93, 89, 95, 97, 181, 99, 100

Which measure of central tendency would seem to best represent the “typical” time that the rep spent with a client?

- a. median
- b. variance
- c. standard deviation
- d. mean
- e. mode

Ans: A, LO: 1, Bloom: , Difficulty: Easy, Min:, AACSB:

27. The mean of a sample:

- a. cannot exceed the variance of the data set
- b. cannot exceed the standard deviation of the data set
- c. is determined by adding up all of the values and dividing by the number of observations
- d. is determined by adding up all of the values and dividing by the number of observations minus 1.
- e. will be equal to the median

Ans: C, LO: 1, Bloom: , Difficulty: Easy, Min: , AACSB:

28. If a data set has an even number of observations, then the median:

- a. is the value of the middle item
- b. is the average of the values for the middle two items when all of the items are arranged in ascending order
- c. must be equal to the mean
- d. is equal to the mode
- e. none of the above

Ans: B, LO: 1, Bloom: , Difficulty: Easy, Min:, AACSB:

29. The point for which at least half the values in a data set are at or above the point and at least half the numbers are at or below the point is called the:

- a. mode
- b. peak
- c. mean
- d. median
- e. average

Ans: D, LO: 1, Bloom: , Difficulty: Easy, Min:, AACSB:

30. In a data set with an odd number of observations, n :

- a. the median will be one of the values contained in the data set.
- b. the median will be the average of the two central values.
- c. the median is the $(n-1)/2$ nd observation
- d. the median represents the “balance point” of the observations.
- e. the median will be equal to the mode

Ans: A, LO: 1, Bloom: , Difficulty: Easy, Min: , AACSB:

31. If two groups of numbers have the same mean, then their:

- a. standard deviations must also be equal
- b. medians must also be equal
- c. modes must also be equal
- d. variances must also be equal
- e. none of the above

Ans: E, LO: 1 & 2, Bloom: , Difficulty: Easy, Min: , AACSB:

32. Which of the following best describes the mean absolute deviation (MAD):

- a. it is the average of the squared differences between each data value and the mean
- b. it is the negative square root of the variance
- c. it measures the average absolute difference of data points from the mean
- d. it is divided by $n - 1$ if the data is from a population
- e. none of the above

Ans: C, LO: 2, Bloom: , Difficulty: Easy, Min: , AACSB:

33. If the variance of a data set is correctly computed with the formula using $n - 1$ in the denominator, which of the following is true:

- a. the data set is a sample
- b. the data set is a population
- c. the data set could be either a sample or a population
- d. the data set is from a census
- e. none of the above

Ans: A, LO: 2, Bloom: , Difficulty: Medium, Min: , AACSB:

34. Which of the following descriptive measures of dispersion is NOT in the same units as the original data?

- a. range
- b. mean absolute deviation
- c. variance
- d. standard deviation
- e. none of the above

Ans: C, LO: 2, Bloom: , Difficulty: Medium, Min: , AACSB:

35. The standard deviation of a sample:

- a. is always smaller than the mean of the sample.
- b. is always greater than the mean of the sample.
- c. is always smaller than the variance of the sample.
- d. is always greater than the variance of the sample.
- e. none of the above.

Ans: E, LO: 2, Bloom: , Difficulty: Medium, Min: , AACSB:

36. If the standard deviation of a data set is 0,

- a. the data set is symmetric, and the negative values cancelled out the positive values.
- b. the mean of the data set must also be 0.
- c. a calculation error must have been made, as the standard deviation cannot be 0 when the data set has positive values.
- d. all of the observations in the data set must be the same.
- e. none of the above.

Ans: D, LO: 2, Bloom: , Difficulty: Medium, Min: , AACSB:

37. Which of the following is an accurate interpretation of the standard deviation of a population?

- a. The standard deviation represents the exact average distance of each observation to the mean.
- b. The standard deviation represents the square root of the average squared distance of each observation to the mean.
- c. The standard deviation represents the square root of the sum of the squared distance of each observation to the mean.
- d. The standard deviation represents the average deviation of each observation from the mean.
- e. The standard deviation calculation involves $n-1$ in the denominator.

Ans: B, LO: 2, Bloom: , Difficulty: Medium, Min: , AACSB:

38. A frequency distribution is:

- a. a tabular summary of a set of data showing the fraction of items in each of several non-overlapping classes
- b. a graphical form of representing data
- c. a graphical device for presenting qualitative data
- d. a tabular summary of a set of data showing the number of items in each of several non-overlapping classes
- e. none of the above

Ans: D, LO: 3, Bloom: , Difficulty: Easy, Min: , AACSB:

39. When looking at the shape of a distribution, which of the following best describes positive skewness?

- a. the distribution is evenly split into two identical halves
- b. the distribution has an elongated tail in the right-hand direction
- c. the distribution has an elongated tail in the left-hand direction
- d. the distribution has a very steep single peak
- e. the distribution has two separate peaks with a valley in between

Ans: B, LO: 3, Bloom: , Difficulty: Easy, Min: , AACSB:

40. Which of the following distribution shapes is one in which the distribution is split into two identical halves?

- a. positively skewed
- b. negatively skewed
- c. symmetric
- d. bimodal
- e. flat

Ans: C, LO: 3, Bloom: , Difficulty: Easy, Min: , AACSB:

41. The degree of steepness or peakedness in graph of a frequency or relative frequency distribution is called:

- a. modality
- b. kurtosis
- c. skewness
- d. dispersion
- e. variation

Ans: B, LO: 3, Bloom: , Difficulty: Easy, Min: , AACSB:

42. On a recent biology quiz, about 90 percent of students earned excellent scores, but the other 10 percent did very poorly. The shape of the distribution of quiz scores is best described as:

- a. symmetric
- b. positively skewed
- c. negatively skewed
- d. steeply peaked
- e. bimodal

Ans: C, LO: 3, Bloom: , Difficulty: Medium, Min: , AACSB: None

43. The degree to which a data distribution has one extended “tail” showing either unusually large or unusually small values is called:

- a. kurtosis
- b. peakedness
- c. skewness
- d. symmetry
- e. unimodal

Ans: C, LO: 3, Bloom: , Difficulty: Easy, Min: , AACSB:

44. A tabular summary of a set of data showing the proportion of the total number of items in several non-overlapping classes is a:

- a. frequency distribution
- b. relative frequency distribution
- c. skewed frequency distribution
- d. cumulative frequency distribution
- e. none of the above

Ans: B, LO: 4, Bloom: , Difficulty: Easy, Min: , AACSB:

45. The relative frequency of a class is computed by:

- a. dividing the midpoint of the class by the sample size
- b. dividing the frequency of the class by the midpoint
- c. dividing the sample size by the frequency of the class
- d. dividing the frequency of the class by the sample size
- e. none of the above

Ans: D, LO: 4, Bloom: , Difficulty: Easy, Min: , AACSB:

46. The total number of data items with a value less than or equal to the upper limit for the class is given by the:

- a. frequency distribution
- b. relative frequency distribution
- c. cumulative frequency distribution
- d. cumulative relative frequency distribution
- e. none of the above

Ans: C, LO: 5, Bloom: , Difficulty: Easy, Min.: AACSB:

47. Which of the following graphical presentations for depicting quantitative data has no natural separation between rectangles of adjacent classes:

- a. bar chart
- b. pie chart
- c. histogram
- d. box-and-whisker plot
- e. scatter diagram

Ans: C, LO: 6, Bloom: , Difficulty: Easy, Min.: AACSB:

48. Which of the following best describes a histogram?

- a. it is a bar chart used to show the relative frequency of qualitative data
- b. it is commonly used to graphically present quantitative data
- c. it is a bar chart that has no natural separation between the adjacent classes
- d. b and c
- e. all of the above

Ans: D, LO: 6, Bloom: , Difficulty: Easy, Min.: AACSB:

49. When should measures of location and dispersion be computed from grouped data rather than from individual data values?

- a. as much as possible since computations are easier
- b. only when individual data values are unavailable
- c. whenever computer packages for descriptive statistics are unavailable
- d. only when the data are from a population
- e. none of the above

Ans: B, LO: 6, Bloom: , Difficulty: Medium, Min.: AACSB:

50. When computing descriptive statistics from grouped data

- a. data values are treated as if they occur at the midpoint of a class

- b. the grouped data result is more accurate than the ungrouped result
- c. the grouped data computations are used only when a population is being analyzed
- d. all of the above
- e. none of the above

Ans: A, LO: 6, Bloom: , Difficulty: Easy, Min:, AACSB:

51. When calculating the mean for grouped data, which of the following is used for the weights in the formula:

- a. midpoint of each class
- b. the class frequencies
- c. the upper limit of each class
- d. the bin range
- e. none of the above

Ans: B, LO: 6, Bloom: , Difficulty: Easy, Min:, AACSB:

FILL IN THE BLANK

52. The _____ is the measure of central tendency that is most affected by very large or very small data values.

- a. mean
- b. median
- c. mode
- d. range
- e. variance

Ans: A, LO: 1, Bloom: , Difficulty: Easy, Min:, AACSB:

53. The _____ is the measure of dispersion that is NOT expressed in the same units as the mean.

- a. range
- b. mean absolute deviation
- c. variance
- d. standard deviation
- e. interquartile range

Ans: C, LO: 2, Bloom: , Difficulty: Easy, Min:, AACSB:

54. In a bar chart, _____ is indicated by an elongated tail in the left-hand direction.

- a. positive skewness
- b. negative skewness
- c. symmetry
- d. kurtosis
- e. bi-modal

Ans: B, LO: 3, Bloom: , Difficulty: Easy, Min:, AACSB:

55. The term _____ describes the shape of a distribution of values when the distribution has two peaks.

- a. skewed
- b. symmetric
- c. negatively adjusted
- d. bimodal
- e. positively skewed

Ans: D, LO: 3, Bloom: , Difficulty: Easy, Min:, AACSB:

56. In a relative frequency distribution, _____ is substituted for the absolute count $f(x)$ in each class.

- a. a relative count $P(x)$
- b. a cumulative count
- c. a single count
- d. the midpoint
- e. the sample size

Ans: A, LO: 4, Bloom: , Difficulty: Easy, Min:, AACSB:

57. A data display that shows the number of data set members that are at or *below* a particular value or the number of data set members that are at or *above* a particular value is called a _____ distribution.

- a. unimodal
- b. symmetric
- c. positively skewed
- d. cumulative
- e. negatively skewed

Ans: D, LO: 5, Bloom: , Difficulty: Easy, Min:, AACSB:

58. When working with grouped data, an approximate class width can be calculated as _____.

- a. smallest value minus largest value divided by sample size
- b. largest value minus smallest value divided by the number of classes
- c. the number of classes divided by the range
- d. the range divided by the actual class width
- e. largest value plus smallest value divided by the number of classes

Ans: B, LO: 6, Bloom: , Difficulty: Easy, Min.: AACSB:

PROBLEMS

59. A data set consists of 10 values: 9, 6, 2, 0, 2, 3, 5, 2, 1, 5. Determine the mean.

- a. 4.0
- b. 3.75
- c. 2.5
- d. 3.5
- e. 3.0

Ans: D, LO: 1, Bloom: , Difficulty: Easy, Min.: AACSB:

60. A data set consists of 10 values: 9, 6, 2, 0, 2, 3, 5, 2, 1, 5. Determine the median.

- a. 3.75
- b. 3.5
- c. 4.0
- d. 3.0
- e. 2.5

Ans: E, LO: 1, Bloom: , Difficulty: Easy, Min.: AACSB:

61. A data set consists of 10 values: 9, 6, 2, 0, 2, 3, 5, 2, 1, 5. Determine the mode.

- a. 2
- b. 3
- c. 2.5
- d. 3.25
- e. 2.75

Ans: A, LO: 1, Bloom: , Difficulty: Easy, Min.: AACSB:

62. Below is a list of shipping costs quoted by six online retailers for the same item. Compute the average shipping cost.

\$3.00 \$2.84 \$2.40 \$3.02 \$2.80 \$2.51

- a. 1.43
- b. 1.98
- c. 2.76
- d. 2.61
- e. 2.38

Ans: C, LO: 1, Bloom: , Difficulty: Easy, Min:, AACSB:

63. Below is a list of shipping costs quoted by six online retailers for the same item. Compute the median shipping cost.

\$3.00 \$2.84 \$2.40 \$3.02 \$2.80 \$2.51

- a. 2.82
- b. 2.76
- c. 1.56
- d. 2.80
- e. 3.5

Ans: A, LO: 1, Bloom: , Difficulty: Easy, Min:, AACSB:

64. The number of US solar energy companies that applied for special tax credits in each of the past 11 months, according to a recent study, is shown below. Determine the mean for the data.

14, 17, 12, 11, 17, 20, 11, 12, 15, 17, 20

- a. 16.33
- b. 15.89
- c. 16.67
- d. 15.09
- e. 13.44

Ans: D, LO: 1, Bloom: , Difficulty: Easy, Min:, AACSB:

65. The number of US solar energy companies that applied for special tax credits in each of the past 11 months, according to a recent study, is shown below. Determine the median for the data.

14, 17, 12, 11, 17, 20, 11, 12, 15, 17, 20

- a. 14.5
- b. 16.0
- c. 14.0

- d. 15.5
- e. 15.0

Ans: E, LO: 1, Bloom: , Difficulty: Easy, Min:, AACSB:

66. The number of US solar energy companies that applied for special tax credits in each of the past 11 months, according to a recent study, is shown below. Determine the mode for the data.

14, 17, 12, 11, 17, 20, 11, 12, 15, 17, 20

- a. 12.5
- b. 16.5
- c. 16
- d. 11
- e. 17

Ans: E, LO: 1, Bloom: , Difficulty: Easy, Min:, AACSB:

67. For a sample of 10 days, Harkin Research recorded the number of visitors to Tilton.com's website. Compute the mean number of visitors per day.

100, 100, 106, 93, 89, 95, 97, 181, 99, 100

- a. 126
- b. 97
- c. 106
- d. 141
- e. 122

Ans: C, LO: 1, Bloom: , Difficulty: Easy, Min:, AACSB:

68. For a sample of 10 days, Harkin Research recorded the number of visitors to Tilton.com's website. Determine the median value for the data.

100, 100, 106, 93, 89, 95, 97, 181, 99, 100

- a. 100
- b. 121
- c. 99.5
- d. 106

e. 115

Ans: C, LO: 1, Bloom: , Difficulty: Easy, Min:, AACSB:

69. For a sample of 10 days, Harkin Research recorded the number of visitors to Tilton.com's website. Determine the mode for the data.

100, 100, 106, 93, 89, 95, 97, 181, 99, 100

- a. 106
- b. 99.5
- c. 105.0
- d. 100
- e. 105.5

Ans: D, LO: 1, Bloom: , Difficulty: Easy, Min:, AACSB:

70. The table shows the GDP per capita (in US \$s) of the G8 countries (*Datablog, Guardian.co.uk, July 8 2009*). What is the mean GDP per capita of the eight countries?

Canada	\$46,799
China	3,577
France	48,293
Germany	45,999
Italy	40,298
Japan	37,644
Russia	14,688
United Kingdom	44,720

- a. \$282,018
- b. \$35,252
- c. \$42,509
- d. \$40,288
- e. \$37,823

Ans: B, LO: 1, Bloom: , Difficulty: Easy, Min:, AACSB:

Canada	\$46,799
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71. The table shows the US \$s of the median GDP per capita of the eight countries?

China	3,577
France	48,293
Germany	45,999
Italy	40,298
Japan	37,644
Russia	14,688
United Kingdom	44,720

shows the GDP per capita (in G8 countries (*Datablog, Guardian.co.uk, July 8 2009*).

- a. \$282,018
- b. \$35,252
- c. \$42,509
- d. \$40,288
- e. \$37,823

Ans: C, LO: 1, Bloom: , Difficulty: Easy, Min.: AACSB:

72. The table shows the life expectancy in years of the G8 countries (*Datablog, Guardian.co.uk, July 8 2009*). What is the mean life expectancy of the eight countries?

Canada	81
China	73
France	81
Germany	80
Italy	81
Japan	83
Russia	66
United Kingdom	79

- a. 78.0
- b. 80.5
- c. 81.0
- d. 75.0
- e. 860.0

Ans: A, LO: 1, Bloom: , Difficulty: Easy, Min.: AACSB:

73. The table shows the life expectancy in years of the G8 countries (*Datablog, Guardian.co.uk, July 8 2009*). What is the median life expectancy of the eight countries?

Canada	81
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China	73
France	81
Germany	80
Italy	81
Japan	83
Russia	66
United Kingdom	79

- a. 78.0
- b. 80.5
- c. 81.0
- d. 75.0
- e. 860.0

Ans: B, LO: 1, Bloom: , Difficulty: Easy, Min:, AACSB:

74. The table shows the life expectancy in years of the G8 countries (*Datablog, Guardian.co.uk, July 8 2009*). What is the mode of life expectancy in the eight countries?

Canada	81
China	73
France	81
Germany	80
Italy	81
Japan	83
Russia	66
United Kingdom	79

- a. 78 years
- b. 80 years
- c. 81 years
- d. 75 years
- e. 860 years

Ans: C, LO: 1, Bloom: , Difficulty: Easy, Min:, AACSB:

75. A data set contains only two values. The larger of the two values is 25. If the range is 12, what is the median value in the data set?

- a. 12
- b. 19
- c. 20
- d. 17
- e. 10

Ans: B, LO: 1, Bloom: , Difficulty: Medium, Min:, AACSB:

76. Below is a list of shipping costs quoted by six online retailers for the same item. Compute the MAD for the shipping cost data.

\$3.00 \$2.84 \$2.40 \$3.02 \$2.80 \$2.51

- a. .235
- b. .312
- c. .204
- d. .164
- e. .238

Ans: C, LO: 2, Bloom: , Difficulty: Easy, Min:, AACSB:

77. Below is a list of shipping costs quoted by six online retailers for the same item. Compute the variance of the shipping cost data. Treat the data as a population.

\$3.00 \$2.84 \$2.40 \$3.02 \$2.80 \$2.51

- a. .033
- b. .241
- c. .137
- d. .054
- e. .015

Ans: D, LO: 2, Bloom: , Difficulty: Easy, Min:, AACSB:

78. Below is a list of shipping costs quoted by six online retailers for the same item. Compute the standard deviation of the shipping cost data. Treat the data as a population.

\$3.00 \$2.84 \$2.40 \$3.02 \$2.80 \$2.51

- a. .55
- b. .23
- c. .058
- d. .37
- e. .64

Ans: B, LO: 2, Bloom: , Difficulty: Easy, Min:, AACSB:

79. The closing share price for G.E. stock over the past seven days is shown below. Compute the range for this data.

112, 115, 111, 116, 116, 116, 112

- a. 4
- b. 6
- c. 5
- d. 4.5
- e. 3

Ans: C, LO: 2, Bloom: , Difficulty: Easy, Min:, AACSB:

80. The closing share price for G.E. stock over the past seven days is shown below. Compute the MAD for the data.

112, 115, 111, 116, 116, 116, 112

- a. 2.0
- b. 3.5
- c. 2.5
- d. 3.0
- e. 1.75

Ans: A, LO: 2, Bloom: , Difficulty: Easy, Min:, AACSB:

81. The closing share price for G.E. stock over the past seven days is shown below. Compute the variance for the data. Treat the data as a population.

112, 115, 111, 116, 116, 116, 112

- a. 3.671
- b. 4.589
- c. 3.423
- d. 4.286
- e. 5.112

Ans: D, LO: 2, Bloom: , Difficulty: Easy, Min:, AACSB:

82. The closing share price for G.E. stock over the past seven days is shown below. Compute the standard deviation for the data. Treat the data as a population.

112, 115, 111, 116, 116, 116, 112

- a. 4.23
- b. 2.07
- c. 2.79
- d. 3.18
- e. 2.54

Ans: B, LO: 2, Bloom: , Difficulty: Easy, Min.: AACSB:

83. For a sample of 10 days, Harkin Research recorded the number of visitors to Tilton.com's website. Determine the MAD for the data.

100, 100, 106, 93, 89, 95, 97, 181, 99, 100

- a. 30
- b. 10
- c. 23
- d. 15
- e. 7.5

Ans: D, LO: 2, Bloom: , Difficulty: Easy, Min.: AACSB:

84. For a sample of 10 days, Harkin Research recorded the number of visitors to Tilton.com's website. Determine the variance for the data. Treat the data as a sample.

100, 100, 106, 93, 89, 95, 97, 181, 99, 100

- a. 26.75
- b. 715.8
- c. 654.9
- d. 515.2
- e. 32.7

Ans: B, LO: 2, Bloom: , Difficulty: Easy, Min.: AACSB:

85. For a sample of 10 days, Harkin Research recorded the number of visitors to Tilton.com's website. Compute the standard deviation for the data. Treat the data as a sample.

100, 100, 106, 93, 89, 95, 97, 181, 99, 100

- a. 542.6
- b. 15.35
- c. 26.75
- d. 682.8
- e. 715.8

Ans: C, LO: 2, Bloom: , Difficulty: Easy, Min:, AACSB:

86. Carnival Cruise Lines reported the number of passengers (in millions) it served for the past 8 years. Compute the range for the data.

YEAR	1	2	3	4	5	6	7	8
PASS	1.89	2.18	2.34	2.33	2.47	2.58	2.67	2.89

- a. 1.2
- b. .6
- c. .5
- d. 1.5
- e. 1.0

Ans: E, LO: 2, Bloom: , Difficulty: Easy, Min:, AACSB:

87. Carnival Cruise Lines reported the number of passengers (in millions) it served for the past 8 years. Compute the MAD for the data.

YEAR	1	2	3	4	5	6	7	8
PASS	1.89	2.18	2.34	2.33	2.47	2.58	2.67	2.89

- a. .46
- b. .23
- c. 1.34
- d. .12
- e. .38

Ans: B, LO: 2, Bloom: , Difficulty: Easy, Min:, AACSB:

88. Carnival Cruise Lines reported the number of passengers (in millions) it served for the past 8 years. Compute the variance for the data. Treat the data as a population.

YEAR	1	2	3	4	5	6	7	8
PASS	1.89	2.18	2.34	2.33	2.47	2.58	2.67	2.89

- a. .012
- b. .156
- c. .083
- d. .229
- e. 1.52

Ans: C, LO: 2, Bloom: , Difficulty: Easy, Min.: AACSB:

89. Carnival Cruise Lines reported the number of passengers (in millions) it served for the past 8 years. Compute the standard deviation for the data. Treat the data as a population.

YEAR	1	2	3	4	5	6	7	8
PASS	1.89	2.18	2.34	2.33	2.47	2.58	2.67	2.89

- a. .012
- b. .156
- c. .083
- d. .288
- e. 1.52

Ans: D, LO: 2, Bloom: , Difficulty: Easy, Min.: AACSB:

90. The table shows the life expectancy in years of the G8 countries (*Datablog, Guardian.co.uk, July 8 2009*). What is the range of life expectancy in the eight countries?

Canada	81
China	73
France	81
Germany	80
Italy	81
Japan	83
Russia	66
United Kingdom	79

- a. 17 years
- b. 25 years

- c. 28.25 years
- d. 78 years
- e. 83 years

Ans: A, LO: 2, Bloom: , Difficulty: Easy, Min.: AACSB:

91. The table shows the life expectancy in years of the G8 countries (*Datablog, Guardian.co.uk, July 8 2009*). Treating the data as a population, what is the mean absolute deviation of life expectancy in the eight countries, in years?

Canada	81
China	73
France	81
Germany	80
Italy	81
Japan	83
Russia	66
United Kingdom	79

- a. 4.25
- b. 4.86
- c. 5.3
- d. 55.0
- e. 78

Ans: A, LO: 2, Bloom: , Difficulty: Easy, Min.: AACSB:

92. The table shows the life expectancy in years of the G8 countries (*Datablog, Guardian.co.uk, July 8 2009*). Treating the data as a population, what is the variance of life expectancy in the eight countries, in years squared?

Canada	81
China	73
France	81

Germany	80
Italy	81
Japan	83
Russia	66
United Kingdom	79

- a. 5.3
- b. 5.7
- c. 10.15
- d. 28.25
- e. 32.3

Ans: D, LO: 2, Bloom: , Difficulty: Easy, Min:, AACSB:

93. A data set contains only two values. One of the two values is 64. If the MAD is 9, what is the standard deviation for this data set?

- a. 6
- b. 81
- c. 3
- d. 9
- e. 12

Ans: D, LO: 2, Bloom: , Difficulty: Hard, Min:, AACSB:

94. Online customers are asked to score the level of customer service they received at Gregory.com. Scores for 20 recent applicants are given below. Show the data in a frequency table, construct the corresponding bar chart. Describe the shape of the distribution.

9 6 8 9 9 5 6 8 5 6
8 9 7 6 8 9 6 5 6 9

- a. normal
- b. unimodal
- c. bell-shaped
- d. symmetric
- e. bimodal

Ans: E, LO: 3, Bloom: , Difficulty: Medium, Min:, AACSB:

95. Below is a frequency table showing the number of new restaurants opened in the city over the past 24 months. Compute the mean number of openings per month over this 24-month period.

Openings (x)	Number of months f(x)
0	9
1	6
2	4
3	3
4	2

- a. .97
- b. 1.29
- c. 1.06
- d. 1.61
- e. 1.74

Ans: B, LO: 3, Bloom: , Difficulty: Easy, Min.: AACSB:

96. Below is a frequency table showing the number of new restaurants opened in the city over the past 24 months. What is the median number of openings per month over this 24-month period.

Openings (x)	Number of months f(x)
0	9
1	6
2	4
3	3
4	2

- a. .5
- b. 1
- c. 2
- d. 3
- e. 1.5

Ans: B, LO: 3, Bloom: , Difficulty: Medium, Min.: AACSB:

97. Below is a frequency table showing the number of new restaurants opened in the city over the past 24 months. Compute the variance of the number of openings data. Treat the data as a population.

Openings (x)	Number of months f(x)
0	9
1	6

2	4
3	3
4	2

- a. 1.71
- b. 1.15
- c. 2.58
- d. 1.09
- e. 2.76

Ans: A, LO: 3, Bloom: , Difficulty: Easy, Min:, AACSB:

98. Below is a frequency table showing the number of new restaurants opened in the city over the past 24 months. Compute the standard deviation of the number of openings data. Treat the data as a population.

Openings (x)	Number of months f(x)
0	9
1	6
2	4
3	3
4	2

- a. .54
- b. 1.31
- c. 2.47
- d. 2.13
- e. 1.72

Ans: B, LO: 3, Bloom: , Difficulty: Easy, Min:, AACSB:

99. Purchasing agent Angela Rodriguez reported the number of sales calls she received from suppliers each of the past 14 days. Compute the mean number of sales calls she received per day over the 14-day period.

Calls (x)	Number of days f(x)
4	1
5	3
6	4

7	4
8	2

- a. 6.2
- b. 5.7
- c. 6.6
- d. 5.1
- e. 7.3

Ans: A, LO: 3, Bloom: , Difficulty: Easy, Min.:, AACSB:

100. Purchasing agent Angela Rodriguez reported the number of sales calls she received from suppliers on each of the past 14 days. What is the median number of calls?

Calls (x)	Number of days f(x)
4	1
5	3
6	4
7	4
8	2

- a. 8
- b. 7.5
- c. 5
- d. 6.5
- e. 6

Ans: E, LO: 3, Bloom: , Difficulty: Medium, Min.:, AACSB:

101. Purchasing agent Angela Rodriguez reported the number of sales calls she received from suppliers on each of the past 14 days. Compute the variance for her daily calls during the 14-day period. Treat the data as a sample.

Calls (x)	Number of days f(x)
4	1
5	3
6	4
7	4
8	2

- a. 1.88
- b. 1.14
- c. 1.67
- d. .78
- e. 1.41

Ans: E, LO: 3, Bloom: , Difficulty: Easy, Min.: AACSB:

102. Purchasing agent Angela Rodriguez reported the number of sales calls she received from suppliers on each of the past 14 days. Compute the standard deviation for her daily calls during the 14-day period. Treat the data as a sample.

Calls (x)	Number of days f(x)
4	1
5	3
6	4
7	4
8	2

- a. 1.19
- b. 1.71
- c. 1.84
- d. .67
- e. 1.67

Ans: A, LO: 3, Bloom: , Difficulty: Easy, Min.: AACSB:

103. Turcott Roof and Deck has 130 jobs scheduled for the upcoming month. The following frequency table shows the estimated time for each of the jobs. Compute the mean number of estimated hours per job.

Estimated Completion Time (hrs) x	Number of Jobs f(x)
20	31
21	46
22	28
23	15
24	10

- a. 21.4
- b. 15.8
- c. 18.2
- d. 19.6
- e. 17.3

Ans: A, LO: 3, Bloom: , Difficulty: Easy, Min:, AACSB:

104. Turcott Roof and Deck has 130 jobs scheduled for the upcoming month. The following frequency table shows the estimated completion time for each of the jobs. Compute the median completion time estimate.

Estimated Completion Time (hrs) x	Number of Jobs f(x)
20	31
21	46
22	28
23	15
24	10

- a. 32
- b. 65
- c. 21
- d. 66
- e. 18

Ans: C, LO: 3, Bloom: , Difficulty: Medium, Min:, AACSB:

105. Turcott Roof and Deck has 130 jobs scheduled for the upcoming month. The following frequency table shows the estimated time for each of the jobs. Compute the variance for the estimated completion time data. Treat the data as a population.

Estimated Completion Time (hrs) x	Number of Jobs $f(x)$
20	31
21	46
22	28
23	15
24	10

- a. 2.88
- b. 2.70
- c. 1.42
- d. 1.19
- e. 1.06

Ans: C, LO: 3, Bloom: , Difficulty: Easy, Min.: AACSB:

106. Turcott Roof and Deck has 130 jobs scheduled for the upcoming month. The following frequency table shows the estimated completion time for each of the jobs. Construct the frequency bar chart for the data and describe its shape.

Estimated Completion Time (hrs) x	Number of Jobs $f(x)$
20	31
21	46
22	28
23	15
24	10

- a. bimodal
- b. negatively skewed
- c. positively skewed
- d. convex
- e. symmetric

Ans: C, LO: 3, Bloom: , Difficulty: Easy, Min:, AACSB:

107. In a recent survey, 75 college students were asked how many e-textbooks they are using this term. Survey results are as follows. Compute the mean number of e-textbooks for students in the survey.

Number of e-textbooks x	Number of Students $f(x)$
0	1
1	4
2	8
3	13
4	22
5	18
6	9

- a. 1.98
- b. 4.83
- c. 2.62
- d. 3.25
- e. 3.88

Ans: E, LO: 3, Bloom: , Difficulty: Easy, Min:, AACSB:

108. In a recent survey, 75 college students were asked how many e-textbooks they are using this term. Survey results are as follows. Compute the median number of e-textbooks for students in the survey.

Number of e-textbooks x	Number of Students $f(x)$
0	1
1	4
2	8
3	13
4	22
5	18
6	9

- a. 2
- b. 4
- c. 5
- d. 38
- e. 75

Ans: B, LO: 3, Bloom: , Difficulty: Medium, Min:, AACSB:

109. In a recent survey, 75 college students were asked how many e-textbooks they are using this term. Survey results are as follows. Compute the variance for the number of e-textbooks in use by students in the survey. Treat the data as a population.

Number of e-textbooks x	Number of Students f(x)
0	1
1	4
2	8
3	13
4	22
5	18
6	9

- a. 1.58
- b. 1.0
- c. 2.0
- d. 2.25
- e. 1.75

Ans: C, LO: 3, Bloom: , Difficulty: Easy, Min.: AACSB:

110. In a recent survey, 75 college students were asked how many e-textbooks they are using this term. Survey results are as follows. Compute the standard deviation for the number of e-textbooks in use by students in the survey. Treat the data as a population.

Number of e-textbooks x	Number of Students f(x)
0	1
1	4
2	8
3	13
4	22
5	18
6	9

- a. 2.00
- b. 1.41
- c. 3.67
- d. 1.78
- e. 2.24

Ans: B, LO: 3, Bloom: , Difficulty: Easy, Min:, AACSB:

111. Over the past month, Kim recorded the number of hours she slept each night. The frequency table below summarizes her sleep habits. What is the average number of hours Kim slept each night?

Hours	Frequency
5	1
6	3
7	14
8	9
9	1
10	2

- a. 5 hours
- b. 7.4 hours
- c. 7.5 hours
- d. 7.7 hours
- e. 6.6 hours

Ans: B, LO: 3, Bloom: , Difficulty: Easy, Min: , AACSB:

112. Over the past 30 days, Kim recorded the number of hours that she slept each night. The frequency table below summarizes her sleep habits. What is the median number of hours Kim slept each night?

Hours	Frequency
5	1
6	3
7	14
8	9
9	1
10	2

- a. 7.0 hours
- b. 7.4 hours
- c. 7.5 hours
- d. 7.7 hours
- e. 6.6 hours

Ans: A, LO: 3, Bloom: , Difficulty: Medium, Min: , AACSB:

113. Over the past 30 days, Kim recorded the number of hours that she slept each night. The frequency table below summarizes her sleep habits. Treating the data as a sample, what is the variance of Kim's nightly hours of sleep, in hours squared?

Hours	Frequency
5	1
6	3
7	14
8	9
9	1
10	2

- a. 1.07
- b. 1.14
- c. 3.50
- d. 33.20
- e. 6.2

Ans: B, LO: 3, Bloom: , Difficulty: Medium, Min: , AACSB:

114. The following chart gives the number of full years served by the first 42 presidents of the United States (up to and including George W. Bush). What is the average number of full years served by the first 42 presidents of the United States?

Full Years	Frequency
0	1
1	2
2	2
3	3
4	15
5	2
6	2
7	1
8	13
12	1

- a. 4.0 years
- b. 4.2 years
- c. 4.8 years
- d. 5.2 years
- e. 6.5 years

Ans: D, LO: 3, Bloom: , Difficulty: Easy, Min: , AACSB:

115. The following chart gives the number of full years served by the first 42 presidents of the United States (up to and including George W. Bush). What is the median number of full years served by the first 42 presidents of the United States?

Full Years	Frequency
0	1
1	2
2	2
3	3
4	15
5	2
6	2
7	1
8	13
12	1

- a. 2.0 years
- b. 4.0 years
- c. 5.2 years
- d. 8.5 years
- e. 6.3 years

Ans: B, LO: 3, Bloom: , Difficulty: Medium, Min: , AACSB:

116. The following chart gives the number of full years served by the first 42 presidents of the United States (up to and including George W. Bush). What is the standard deviation of full years served by the first 42 presidents of the United States? Remember that this includes all of the presidents.

Full Years	Frequency
0	1
1	2
2	2
3	3
4	15
5	2
6	2
7	1
8	13
12	1

- a. 2.0 years
- b. 4.0 years
- c. 5.2 years
- d. 6.5 years
- e. 8.3 years

Ans: D, LO: 3, Bloom: , Difficulty: Medium, Min: , AACSB:

117. Atlantic Power and Light tracked daily power surges over the past 500 days. Results are reported in the relative frequency table below. Compute the mean number of surges per day.

Surges (x)	Proportion of Days P(x)
0	.10
1	.38
2	.23
3	.19
4	.06
5	.04

- a. 1.22
- b. 1.85
- c. 2.35
- d. 2.50
- e. 2.19

Ans: B, LO: 4, Bloom: , Difficulty: Easy, Min: , AACSB:

118. Atlantic Power and Light tracked daily power surges over the past 500 days. Results are reported in the relative frequency table below. Compute the variance for the number of daily power surges.

Surges (x)	Proportion of Days P(x)
0	.10
1	.38
2	.23
3	.19
4	.06
5	.04

- a. 1.55
- b. 1.05
- c. 1.12
- d. .86
- e. 1.98

Ans: A, LO: 4, Bloom: , Difficulty: Easy, Min: , AACSB:

119. Atlantic Power and Light tracked daily power surges over the last 500 days. Results are reported in the relative frequency table below. Compute the standard deviation for the daily power surge data.

Surges (x)	Proportion of Days P(x)
0	.10
1	.38
2	.23
3	.19
4	.06
5	.04

- a. 1.48
- b. 1.89
- c. 1.72
- d. 1.66
- e. 1.24

Ans: E, LO: 4, Bloom: , Difficulty: Easy, Min:, AACSB:

120. The number of auditors required for 200 recent audits conducted by the IRS office in Cincinnati is shown in the relative frequency table below. Compute the mean number of auditors per audit.

Number of auditors (x)	Proportion of audits P(x)
1	.39
2	.27
3	.17
4	.08
5	.05
6	.04

- a. 2.65
- b. 2.25
- c. 1.75
- d. 1.25
- e. 1.55

Ans: B, LO: 4, Bloom: , Difficulty: Easy, Min:, AACSB:

121. The number of days required per audit for 100 recent audits conducted by the IRS office in Cincinnati is shown in the relative frequency table below. Determine the median number of required auditors per job.

Number of auditors (x)	Proportion of audits P(x)
1	.39
2	.27
3	.17
4	.08
5	.05
6	.04

- a. 3
- b. 1
- c. 2.5
- d. 1.5
- e. 2

Ans: E, LO: 4, Bloom: , Difficulty: Medium, Min:, AACSB:

122. The number of days required per audit for 100 recent audits conducted by the IRS office in Cincinnati is shown in the relative frequency table below. Compute the variance of x , the number of required auditors. Treat the data as a population.

Number of auditors (x)	Proportion of audits P(x)
1	.39
2	.27
3	.17
4	.08
5	.05
6	.04

- a. 1.91
- b. 1.25
- c. 1.34
- d. .97
- e. 2.52

Ans: A, LO: 4, Bloom: , Difficulty: Easy, Min:, AACSB:

123. The number of days required per audit for 100 recent audits conducted by the IRS office in Cincinnati is shown in the relative frequency table below. Compute the standard deviation of x , the number of required auditors. Treat the data as a population.

Number of auditors (x)	Proportion of audits $P(x)$
1	.39
2	.27
3	.17
4	.08
5	.05
6	.04

- a. 1.03
- b. 2.06
- c. 1.38
- d. 1.72
- e. 2.41

Ans: C, LO: 4, Bloom: , Difficulty: Easy, Min:, AACSB:

124. Below is a frequency table showing the results of a recent customer survey done at the Mall of America in Minneapolis. Fifty shoppers were asked, "How many times did you visit the Mall last month to shop?" Determine the "less than or equal to" cumulative frequency that would be appropriate for an x value of 2 mall visits.

Number of visits (x)	Number of Shoppers $f(x)$
0	6
1	23
2	11
3	9
4	1

- a. 36
- b. 40
- c. 10
- d. 30
- e. 9

Ans: B, LO: 5, Bloom: , Difficulty: Easy, Min:, AACSB:

125. Below is a frequency table showing the results of a recent customer survey done at the Mall of America in Minneapolis. Fifty shoppers were asked, “How many times did you visit the Mall last month to shop?” Determine the “less than or equal to” cumulative relative frequency that would be appropriate for an x value of 1 mall visits.

Number of visits (x)	Number of Shoppers $f(x)$
0	6
1	23
2	11
3	9
4	1

- a. .12
- b. .58
- c. .96
- d. .80
- e. .65

Ans: B, LO: 5, Bloom: , Difficulty: Medium, Min.: AACSB:

126. The waiting line of cars at In-N-Out Burger on Van Nuys Blvd. can get fairly long. In a recent study, you checked the length of the line 60 random times during one day. The table below shows the full set of results. Determine the “less than or equal to” cumulative frequency for an x value of 4 customers in line.

Number of cars in line (x)	Number of Checks $f(x)$
0	2
1	11
2	19
3	14
4	7
5	4
6	3

- a. 57
- b. 46
- c. 53
- d. 17
- e. 3

Ans: C, LO: 5, Bloom: , Difficulty: Easy, Min.: AACSB:

127. The waiting line of cars at In-N-Out Burger on Van Nuys Blvd. can get fairly long. In a recent study, you checked the length of the line 60 random times during one day. The table below shows the full set of results. Determine the "less than or equal to" cumulative relative frequency for an x value of 3 customers in line.

Number of cars in line (x)	Number of Checks $f(x)$
0	2
1	11
2	19
3	14
4	7
5	4
6	3

- a. .467
- b. .950
- c. .233
- d. .883
- e. .767

Ans: E, LO: 5, Bloom: , Difficulty: Medium, Min:, AACSB:

128. Below is a table showing the number of cancelled flights for Alleghany Airlines over the past 25 days. If you were to construct a "less than or equal to" cumulative frequency table what value would you enter as the cumulative frequency associated with 3 cancellations?

1	1	0	1	3	0	1	4	5	1
3	0	1	2	3	2	1	0	1	2
3	3	1	0	0					

- a. 1
- b. 18
- c. 2
- d. 15
- e. 23

Ans: E, LO: 5, Bloom: , Difficulty: Easy, Min:, AACSB:

129. Below is a table showing the number of cancelled flights for Alleghany Airlines over the past 25 days. If you were to construct a "greater than or equal to" cumulative frequency table what value would you enter as the cumulative RELATIVE frequency associated with 2 cancellations?

1	1	0	1	3	0	1	4	5	1
---	---	---	---	---	---	---	---	---	---

3	0	1	2	3	2	1	0	1	2
3	3	1	0	0					

- a. .24
- b. .60
- c. .72
- d. .92
- e. .96

Ans: C, LO: 5, Bloom: , Difficulty: Medium, Min:, AACSB:

130. Below is a frequency distribution table showing the number of cars sold by the 30 sales reps at Hermiston Kia during the past month. You plan to show the data in a "less than or equal to" cumulative relative frequency table. What cumulative frequency would you show for 2 cars?

Cars Sold (x)	No. of Sales Reps f(x)
0	4
1	12
2	7
3	5
4	2

- a. 4
- b. 23
- c. 16
- d. 30
- e. 28

Ans: B, LO: 5, Bloom: , Difficulty: Easy, Min.: AACSB:

131. Below is a frequency distribution table showing the number of cars sold by the 30 sales reps at Hermiston Kia during the past month. You plan to show the data in a "greater than or equal to" cumulative relative frequency table. What cumulative relative frequency would you show for 1 car?

Cars Sold (x)	No. of Sales Reps f(x)
0	4
1	12
2	7
3	5
4	2

- a. .533
- b. .867
- c. .767
- d. .467
- e. .133

Ans: A, LO: 5, Bloom: , Difficulty: Medium, Min.: AACSB:

132. Test scores for 40 job applicants at Briar and Flanagan are reported in the table below. Suppose you intend to show the values in a grouped data relative frequency table, using the intervals 30 to under 40, 40 to under 50, 50 to under 60, and so on. What's the frequency value that you should enter in the table for the interval "60 to under 70"?

91	81	74	66	46
99	80	75	60	49
96	84	78	58	47
99	83	67	56	42
94	87	63	58	35
87	72	69	59	31
85	71	62	52	33
83	79	68	41	32

- a. 4
- b. 5
- c. 6
- d. 7
- e. 8

Ans: D, LO: 6, Bloom: , Difficulty: Easy, Min:, AACSB:

133. Test scores for 40 job applicants at Briar and Flanagan are reported in the table below. Suppose you intend to show the values in a grouped data relative frequency table, using the intervals 30 to under 40, 40 to under 50, 50 to under 60, and so on. What's the relative frequency value that you should enter in the table for the interval "70 to under 80"?

91	81	74	66	46
99	80	75	60	49
96	84	78	58	47
99	83	67	56	42
94	87	63	58	35
87	72	69	59	31
85	71	62	52	33
83	79	68	41	32

- a. .125
- b. .175
- c. .150
- d. .200
- e. .250

Ans: C, LO: 6, Bloom: , Difficulty: Medium, Min:, AACSB:

134. The relative frequency table below shows the closing share price changes for the 100 most actively traded NASDAQ stocks yesterday. Use the grouped data table to approximate the mean for the data represented.

Price Change	Interval Midpoint	Proportion of Stocks
-1.00 to under -.60	-0.80	0.03
-.60 to under -.20	-0.40	0.03
-.20 to under .20	0.00	0.2
.20 to under .60	0.40	0.44
.60 to under 1.00	0.80	0.16
1.00 to under 1.40	1.20	0.06
1.40 to under 1.80	1.60	0.05
1.80 to under 2.20	2.00	0.03

- a. 1.07
- b. 1.34
- c. .48
- d. .22
- e. .62

Ans: C, LO: 6, Bloom: , Difficulty: Easy, Min:, AACSB:

135. The relative frequency table below shows the closing share price changes for the 100 most actively traded NASDAQ stocks yesterday. Use the grouped data table to approximate the variance for the data represented.

Price Change	Interval Midpoint	Proportion of Stocks
-1.00 to under -.60	-0.80	0.03
-.60 to under -.20	-0.40	0.03
-.20 to under .20	0.00	0.2
.20 to under .60	0.40	0.44
.60 to under 1.00	0.80	0.16
1.00 to under 1.40	1.20	0.06
1.40 to under 1.80	1.60	0.05
1.80 to under 2.20	2.00	0.03

- a. .78
- b. .301
- c. .133
- d. .421
- e. .55

Ans: B, LO: 6, Bloom: , Difficulty: Medium, Min:, AACSB:

136. The relative frequency table below shows the closing share price changes for the 100 most actively traded NASDAQ stocks yesterday. Use the grouped data table to approximate the standard deviation for the data represented.

Price Change	Interval Midpoint	Proportion of Stocks
-1.00 to under -.60	-0.80	0.03
-.60 to under -.20	-0.40	0.03
-.20 to under .20	0.00	0.2
.20 to under .60	0.40	0.44
.60 to under 1.00	0.80	0.16
1.00 to under 1.40	1.20	0.06
1.40 to under 1.80	1.60	0.05
1.80 to under 2.20	2.00	0.03

- a. 1.22
- b. .30
- c. .83
- d. .16
- e. .55

Ans: E, LO: 6, Bloom: , Difficulty: Medium, Min:, AACSB:

137. Below is a table showing the ages of current active users of FaceTime.com. Use the table to approximate the mean age of users.

Age of User	Number of Users
0-20	81.2
20-40	79.5
40-60	84.1
60-80	45.9
80-100	11.4
100-120	.1

- a. 43.75
- b. 32.44
- c. 35.14
- d. 41.22
- e. 38.55

Ans: E, LO: 6, Bloom: , Difficulty: Easy, Min:, AACSB:

138. Below is a table showing the ages of current active users of FaceTime.com. Use the table to approximate the variance of user ages.

Age of User	Number of Users
0-20	81.2
20-40	79.5
40-60	84.1
60-80	45.9
80-100	11.4
100-120	0.1

- a. 431.27
- b. 526.35
- c. 367.19
- d. 484.23
- e. 572.84

Ans: B, LO: 6, Bloom: , Difficulty: Medium, Min:, AACSB:

139. Below is a table showing the ages of current active users of FaceTime.com. Use the table to approximate the standard deviation of user ages.

Age of User	Number of Users
0-20	81.2
20-40	79.5
40-60	84.1
60-80	45.9
80-100	11.4
100-120	.1

- a. 22.9
- b. 19.7
- c. 12.8
- d. 34.6
- e. 25.2

Ans: A, LO: 6, Bloom: , Difficulty: Medium, Min:, AACSB:

140. The table shows the phone charge for 64 international calls that you made last week. Show the values in a grouped-data frequency table, using classes \$0 to under \$2, \$2 to under \$4, \$4 to under \$6, and so on. Use the grouped data table to estimate you average charge per call.

1.34	1.36	2.54	5.43	4.16	4.79	6.77	7.62
0.76	0.56	3.62	5.16	5.17	5.67	7.14	8.45
0.20	1.53	2.09	4.12	4.33	4.40	7.82	9.54
1.09	0.96	3.65	4.89	5.78	6.12	6.51	9.07
1.35	1.28	2.13	4.36	4.21	6.73	7.87	9.53
1.77	0.76	3.5	5.66	5.67	6.02	6.56	8.12
0.49	0.41	2.98	4.13	5.06	5.17	6.41	8.33
0.13	0.45	4.78	4.91	5.45	7.45	6.73	8.51

- a. 4.94
- b. 5.02
- c. 4.24
- d. 4.63
- e. 4.03

Ans: D, LO: 6, Bloom: , Difficulty: Medium, Min:, AACSB:

141. The table shows the phone charge for 64 international calls that you made last week. Show the values in a grouped-data frequency table, using classes \$0 to under \$2, \$2 to under \$4, \$4 to under \$6, and so on. Use the grouped data table to estimate the variance of the phone charges. Treat the data as a population.

1.34	1.36	2.54	5.43	4.16	4.79	6.77	7.62
0.76	0.56	3.62	5.16	5.17	5.67	7.14	8.45
0.20	1.53	2.09	4.12	4.33	4.40	7.82	9.54
1.09	0.96	3.65	4.89	5.78	6.12	6.51	9.07
1.35	1.28	2.13	4.36	4.21	6.73	7.87	9.53
1.77	0.76	3.5	5.66	5.67	6.02	6.56	8.12
0.49	0.41	2.98	4.13	5.06	5.17	6.41	8.33
0.13	0.45	4.78	4.91	5.45	7.45	6.73	8.51

- a. 6.26
- b. 7.66
- c. 6.55
- d. 6.86
- e. 7.15

Ans: E, LO: 6, Bloom: , Difficulty: Hard, Min:, AACSB:

142. The table shows the phone charge for 64 international calls that you made last week. Show the values in a grouped-data frequency table, using classes \$0 to under \$2, \$2 to under \$4, \$4 to under \$6, and so on. Use the grouped data table to estimate the standard deviation of the phone charges. Treat the data as a population.

1.34	1.36	2.54	5.43	4.16	4.79	6.77	7.62
0.76	0.56	3.62	5.16	5.17	5.67	7.14	8.45
0.20	1.53	2.09	4.12	4.33	4.40	7.82	9.54
1.09	0.96	3.65	4.89	5.78	6.12	6.51	9.07
1.35	1.28	2.13	4.36	4.21	6.73	7.87	9.53
1.77	0.76	3.5	5.66	5.67	6.02	6.56	8.12
0.49	0.41	2.98	4.13	5.06	5.17	6.41	8.33
0.13	0.45	4.78	4.91	5.45	7.45	6.73	8.51

- a. 2.04
- b. 2.67
- c. 2.96
- d. 2.28
- e. 2.87

Ans: B, LO: 6, Bloom: , Difficulty: Hard, Min:, AACSB:

143. The age distribution of consumers who identify themselves as “frequent users” of the Internet to make purchases is shown in the table. Estimate the mean age of these frequent users.

Age	Midpoint	Proportion
18-25	21.5	.147
25-35	30	.194
35-45	40	.256
45-55	50	.170
55-65	60	.101
65-80	72.5	.132

- a. 43.4
- b. 41.7
- c. 50.8
- d. 46.2
- e. 52.9

Ans: A, LO: 6, Bloom: , Difficulty: Easy, Min:, AACSB:

144. The age distribution of consumers who identify themselves as “frequent users” of the Internet to make purchases is shown in the table. Estimate the variance of frequent user ages. Treat the data as from a population.

Age	Midpoint	Proportion
18-25	21.5	.147
25-35	30	.194
35-45	40	.256
45-55	50	.170
55-65	60	.101
65-80	72.5	.132

- a. 269.5
- b. 213.8
- c. 225.9
- d. 287.4
- e. 255.3

Ans: E, LO: 6, Bloom: , Difficulty: Medium, Min:, AACSB:

145. The age distribution of consumers who identify themselves as “frequent users” of the Internet to make purchases is shown in the table. Estimate the standard deviation of frequent user ages. Treat the data as a population.

Age	Midpoint	Proportion
18-25	21.5	.147
25-35	30	.194
35-45	40	.256
45-55	50	.170
55-65	60	.101
65-80	72.5	.132

- a. 15.1
- b. 19.7
- c. 16.0
- d. 17.4
- e. 22.4

Ans: C, LO: 6, Bloom: , Difficulty: Medium, Min:, AACSB:

146. The table below summarizes the prices of the most recent 25 home sales in the Magnolia area. Use the information provided in the table to estimate the average price of the most recent 25 homes sold in Magnolia. What is your estimate of the average price, in dollars?

Price (\$1000s)	Frequency
600 to under 700	2
700 to under 800	8
800 to under 900	7
900 to under 1,000	4
1,000 to under 1,100	3
1,100 to under 1,200	1

- a. \$854
- b. \$900
- c. \$854,000
- d. \$900,000
- e. \$1,000,050

Ans: C, LO: 6, Bloom: , Difficulty: Easy, Min: , AACSB:

147. The table below summarizes the prices of the most recent 25 home sales in the Magnolia area. Treating the information as population data, estimate the standard deviation of the price of the most recent 25 homes sold in Magnolia. What is your estimate of the standard deviation, in dollars?

Price (\$1000s)	Frequency
600 to under 700	2
700 to under 800	8
800 to under 900	7
900 to under 1,000	4
1,000 to under 1,100	3
1,100 to under 1,200	1

- a. \$128
- b. \$16,384
- c. \$128,000
- d. \$130,639
- e. \$50,100

Ans: C, LO: 6, Bloom: , Difficulty: Medium, Min: , AACSB:

Answers to Multiple Choice Questions

1. A	13. A	25. B	37. B	49. B	61. A
2. A	14. B	26. A	38. D	50. A	62. C
3. B	15. B	27. C	39. B	51. B	63. A
4. A	16. A	28. B	40. C	52. A	64. D
5. B	17. B	29. D	41. B	53. C	65. E
6. A	18. A	30. A	42. C	54. B	66. E
7. A	19. B	31. E	43. C	55. D	67. C
8. A	20. A	32. C	44. B	56. A	68. C
9. A	21. A	33. A	45. D	57. D	69. D
10. B	22. B	34. C	46. C	58. B	70. B
11. A	23. A	35. E	47. C	59. D	71. C
12. B	24. A	36. D	48. D	60. E	72. A

73. B	85. C	97. A	109. C	121. E	133. C
74. C	86. E	98. B	110. B	122. A	134. C
75. B	87. B	99. A	111. B	123. C	135. B
76. C	88. C	100. E	112. A	124. B	136. E
77. D	89. D	101. E	113. B	125. B	137. E
78. B	90. A	102. A	114. D	126. C	138. B
79. C	91. A	103. A	115. B	127. E	139. A
80. A	92. D	104. C	116. D	128. E	140. D
81. D	93. D	105. C	117. B	129. C	141. E
82. B	94. E	106. C	118. A	130. B	142. B
83. D	95. B	107. E	119. E	131. A	143. A
84. B	96. B	108. B	120. B	132. D	144. E

145. C					
146. C					
147. C					